In the Claims:

1. (Currently Amended) A phase-changeable memory device, comprising:

a phase-changeable material pattern of a phase-changeable material that includes nitrogen atoms; and

first and second electrodes electrically connected to the phase-changeable material pattern and provide an electrical signal thereto;

wherein an amount of the nitrogen atoms included in the phase-changeable material is from about 0.25% to about 25% with respect to the total atomic weight of ingredients of the phase-changeable material.

2. (Currently Amended) ~~The device of Claim 1,~~

A phase-changeable memory device, comprising:

a phase-changeable material pattern of a phase-changeable material that includes nitrogen atoms; and

first and second electrodes electrically connected to the phase-changeable material pattern and provide an electrical signal thereto;

wherein the phase-changeable material pattern has a polycrystalline structure.

3. (Canceled)

4. (Currently Amended) ~~The device of Claim 1,~~

A phase-changeable memory device, comprising:

a phase-changeable material pattern of a phase-changeable material that includes nitrogen atoms; and

first and second electrodes electrically connected to the phase-changeable material pattern and provide an electrical signal thereto;

wherein the phase-changeable material pattern comprises Ge-Sb-Te-N, As-Sb-Te-N, As-Ge-Sb-Te-N, Sn-Sb-Te-N, In-Sn-Sb-Te-N, Ag-In-Sb-Te-N, 5A group element-Sb-Te-N, 6A group element-Sb-Te-N, 5A group element-Sb-Se-N, and/or 6A group element-Sb-Se-N.

5. (Original) The device of Claim 1, wherein the first and second electrodes comprise a conductive material containing nitrogen, a conductive material containing carbon,

titanium, tungsten, molybdenum, tantalum, titanium silicide, tantalum silicide and/or a combination thereof.

6. (Original) The device of Claim 5, wherein the first and/or second conductive electrodes further include one of aluminum (Al), aluminum-copper alloy (Al-Cu), aluminum-copper-silicon alloy (Al-Cu-Si), tungsten silicide (WSi), copper (Cu), tungsten titanium (TiW) and/or a combination thereof.

7. (Original) The device of Claim 5, wherein the conductive material containing nitrogen comprises titanium nitride (TiN), tantalum nitride (TaN), molybdenum nitride (MoN), niobium nitride (NbN), titanium silicon nitride (TiSiN), titanium aluminum nitride (TiAlN), titanium boron nitride (TiBN), zirconium silicon nitride (ZrSiN), tungsten silicon nitride (WSiN), tungsten boron nitride (WBN), zirconium aluminum nitride (ZrAlN), molybdenum silicon nitride (MoSiN), molybdenum aluminum nitride (MoAlN), tantalum silicon nitride (TaSiN), tantalum aluminum nitride (TaAlN), titanium oxide nitride (TiON), titanium aluminum oxide nitride (TiAlON), tungsten oxide nitride (WON) and/or tantalum oxide nitride (TaON).

8. (Original) The device of Claim 1, further comprising:

a transistor including a source region, a drain region and a gate electrode;

a lower interconnection electrically connected to the drain region; and

an upper metal interconnection electrically connected to one of the first and second electrodes;

wherein the other of the first and second electrodes is electrically connected to the source region.

9. (Currently Amended) A phase-changeable memory device, comprising:

a phase-changeable material pattern of a phase-changeable material having a polycrystalline structure; and

first and second electrodes electrically connected to the phase-changeable material pattern to provide an electrical signal thereto;

wherein an amount of nitrogen atoms in the phase-changeable material pattern is

from about 0.25% to about 25% with respect to the total atomic weight of ingredients of the phase-changeable material.

10. (Currently Amended) ~~The device of Claim 9,~~

A phase-changeable memory device, comprising:

a phase-changeable material pattern of a phase-changeable material having a polycrystalline structure; and

first and second electrodes electrically connected to the phase-changeable material pattern to provide an electrical signal thereto;

wherein the phase-changeable material pattern comprises Ge-Sb-Te-N, As-Sb-Te-N, As-Ge-Sb-Te-N, Sn-Sb-Te-N, In-Sn-Sb-Te-N, Ag-In-Sb-Te-N, a 5A group element-Sb-Te-N, a 6A group element-Sb-Te-N, a 5A group element-Sb-Se-N, and/or a 6A group element-Sb-Se-N.

11. (Canceled)

12. (Original) A phase-changeable memory device, comprising:

a transistor including a source region, a drain region and a gate electrode disposed on the semiconductor substrate;

a lower interconnection electrically connected to the drain region;

a contact pad formed of the same material and placed on the same height as the lower interconnection;

a variable resistor electrically connected to the contact pad; and

an upper interconnection electrically connected to the variable resistor,

wherein the variable resistor is interposed between the two electrodes and includes nitrogen atoms.

13. (Original) The device of Claim 12, wherein the variable resistor includes a phase-changeable material pattern having a polycrystalline structure.

14. (Original) The device of Claim 13, wherein the variable resistor includes a phase-changeable material pattern that includes nitrogen atoms, wherein an amount of the

nitrogen atoms is from about 0.25% to about 25% with respect to the total atomic weight of ingredients of the phase-changeable material.

15. (Original) The device of Claim 12, wherein the variable resistor includes a phase-changeable material pattern that includes nitrogen atoms, wherein an amount of the nitrogen atoms is from about 0.25% to about 25% with respect to the total atomic weight of ingredients of the phase-changeable material.

16. (Original) The device of Claim 12, wherein the phase-changeable material pattern comprises Ge-Sb-Te-N, As-Sb-Te-N, As-Ge-Sb-Te-N, Sn-Sb-Te-N, In-Sn-Sb-Te-N, Ag-In-Sb-Te-N, a 5A group element-Sb-Te-N, a 6A group element-Sb-Te-N, a 5A group element-Sb-Se-N, and/or a 6A group element-Sb-Se-N.

17. (Original) The device of Claim 12, wherein the first and second electrodes comprise a conductive material containing nitrogen, a conductive material containing carbon, titanium, tungsten, molybdenum, tantalum, titanium silicide, tantalum silicide and/or a combination thereof.

18. (Original) The device of Claim 15, wherein the two electrodes comprise a conductive material containing nitrogen, a conductive material containing carbon, titanium, tungsten, molybdenum, tantalum, titanium silicide, tantalum silicide, and/or a combination thereof.

19. (Original) The device of claim 17, wherein one of the two electrodes is electrically connected to the contact pad and the other electrode is electrode is electrically connected to the upper interconnection,

wherein the other electrode connected to the top electrode further comprises aluminum (Al), aluminum-copper alloy (Al-Cu), aluminum-copper-silicon alloy (Al-Cu-Si), tungsten silicide (WSi), copper (Cu), tungsten titanium (TiW), and/or a combination thereof.

20. (Original) The device of claim 19, wherein the conductive material containing nitrogen comprises titanium nitride (TiN), tantalum nitride (TaN), molybdenum nitride

(MoN), niobium nitride (NbN), titanium silicon nitride (TiSiN), titanium aluminum nitride (TiAlN), titanium boron nitride (TiBN), zirconium silicon nitride (ZrSiN), tungsten silicon nitride (WSiN), tungsten boron nitride (WBN), silicon aluminum nitride (ZrAlN), molybdenum silicon nitride (MoSiN), molybdenum aluminum nitride (MoAlN), tantalum silicon nitride (TaSiN), tantalum aluminum nitride (TaAlN), titanium oxide nitride (TiON), titanium aluminum oxide nitride (TiAlON), tungsten oxide nitride (WON) and/or tantalum oxide nitride (TaON).

21. (Original) A phase-changeable memory device comprising:

a transistor including a source region, a drain region and a gate electrode that are disposed on the semiconductor substrate;

an interlayer dielectric layer formed on the semiconductor substrate to cover the transistor;

a lower interconnection disposed in the interlayer dielectric layer to connect to the drain region electrically;

a contact pad disposed in the interlayer dielectric layer at substantially the same height and formed of the same material as the lower interconnection;

a lower intermetal dielectric layer disposed on the interlayer dielectric layer;

a variable resistor electrically connected to the contact pad;

an upper intermetal dielectric layer disposed on the lower intermetal dielectric layer to cover a side of the variable resistor; and

an upper interconnection disposed in the upper intermetal dielectric layer to connect to the variable resistor electrically,

wherein the variable resistor comprises:

a bottom electrode penetrating a portion of the lower intermetal dielectric layer to electrically connect to the contact pad;

a phase-changeable material pattern containing nitrogen atoms disposed on the lower intermetal dielectric layer and on the bottom electrode ; and

a top electrode disposed on the phase-changeable material pattern to electrically connect to the upper interconnection.

22. (Original) The device of Claim 21, wherein the phase-changeable material

pattern has a polycrystalline structure.

23. (Original) The device of claim 22, wherein an amount of the nitrogen atoms is about from 0.25% to about 25% with respect to a total atomic weight of ingredients of the phase-changeable material pattern.

24. (Original) The device of Claim 23, wherein the phase-changeable material pattern comprises Ge-Sb-Te-N, As-Sb-Te-N, As-Ge-Sb-Te-N, Sn-Sb-Te-N, In-Sn-Sb-Te-N, Ag-In-Sb-Te-N, a 5A group element-Sb-Te-N, a 6A group element-Sb-Te-N, a 5A group element-Sb-Se-N, and/or a 6A group element-Sb-Se-N.

25. (Original) The device of Claim 24, wherein the bottom and top electrodes comprise a conductive material containing nitrogen, a conductive material containing carbon, titanium, tungsten, molybdenum, tantalum, titanium silicide, tantalum silicide, and/or a combination thereof.

26. (Original) The device of Claim 25, wherein a top surface of the top electrode is lower than a top surface of the upper intermetal dielectric layer, and

further comprising a conductive plug penetrating the intermetal dielectric layer on the top electrode to electrically connect to the upper interconnection,

wherein a diameter of the conductive plug is smaller than a width of the top electrode and the conductive plug comprises aluminum (Al), aluminum-copper alloy (Al-Cu), aluminum-copper-silicon alloy (Al-Cu-Si), tungsten silicide (WSi), copper (Cu), tungsten titanium (TiW), and/or a combination thereof.

27. (Original) The device of Claim 26, wherein the conductive material containing nitrogen comprises titanium nitride (TiN), tantalum nitride (TaN), molybdenum nitride (MoN), niobium nitride (NbN), titanium silicon nitride (TiSiN), titanium aluminum nitride (TiAlN), titanium boron nitride (TiBN), zirconium silicon nitride (ZrSiN), tungsten silicon nitride (WSiN), tungsten boron nitride (WBN), silicon aluminum nitride (ZrAlN), molybdenum silicon nitride (MoSiN), molybdenum aluminum nitride (MoAlN), tantalum silicon nitride (TaSiN), tantalum aluminum nitride (TaAlN), titanium oxide nitride (TiON),

titanium aluminum oxide nitride (TiAlON), tungsten oxide nitride (WON) and/or tantalum oxide nitride (TaON).

28.-50. (Canceled)

51. (Currently Amended) The device of Claim [[1]] 2 wherein the polycrystalline structure includes grains of less than about 100 nm in size.

52. (Previously Presented) The device of Claim 9 wherein the polycrystalline structure includes grains of less than about 100 nm in size.